Title: Random rates of return in financial and insurance mathematics

Author: Mladen Pejic

Department: Department of Probability and Mathematical Statistics

Supervisor: RNDr. Jitka Zichová, Dr., Department of Probability and Mathematical Statistics

Abstract in English language: The thesis is focused on the study of stochastic life annuities. It represents a combination of basic probability with financial mathematics and life insurance. The first part is focused on financial mathematics. Special attention is paid to the calculation of present and future values of annuities with stochastic interest rates. In the second part, we demonstrate the use of random interest rates in calculations of present values of annuities related to life insurance. In the third part, we focus on the application of log - normal distribution, which is mostly used in real life problems. In the last part, a numerical study is presented. We asses the effect of the log - normal distribution parameters on the present value of the annuities and we examine the accuracy of the estimates made by the method of moments.